

918. Thus the best mode of experimenting (903) is to heat the liquid in the limb A or B, fig. 71, first; and, having the wires well cleaned and connected, to plunge both in at once, and, retaining the *end* of the heated wire in the hot part of the fluid, to keep both wires in motion, and observe, especially, the first effects: then to take out the wires, reclean them, change them side for side and repeat the experiment, doing this so often as to obtain from the several results a decided and satisfactory conclusion.

919. It next becomes necessary to ascertain whether any true thermo current can be produced by electrolytes and metals, which can interfere with any electrochemical effects dependent upon the action of heat. For this purpose different combinations of electrolytes and metals not acted on chemically by them, were tried, with the following results.

920. Platinum and a very *strong solution of potassa* gave, as the result of many experiments, the hot platinum positive across the electrolyte to the cold platinum, producing a current that could deflect the galvanometer needle about 5°, when the temperatures at the two junctures were 60° and 240°. Gold and the same solution gave a similar result. Silver and a moderately strong solution, of specific gravity 1070, like that used in the ensuing experiments (936) gave the hot silver positive, but now the deflection was scarcely sensible, and not more than 1°. Iron was tried in the same solution, and there was a constant current and deflection of 50° or more, but there was also chemical action (936).

921. I then used *solution of the sulphuret of potassium* (800). As already said, hot platinum is negative in it to the cold metal (909); but I do not think the action was thermo-electric. Palladium with a weaker solution gave no indication of a current.

922. Employing dilute nitric acid, consisting of one volume strong acid and fifty volumes water, platinum gave no certain indication: the hot metal was sometimes in the least degree positive, and at others an equally small degree negative. Gold in the same acid gave a scarcely sensible result; the hot metal was negative. Palladium was as

gold.

923. With dilute sulphuric acid, consisting of one by weight of oil of vitriol and eighty of water, neither platinum nor gold produced any sensible current to my galvanometer by the mere action of heat.

924. *Muriatic acid* and platinum being conjoined, and heated